AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A detection system ~~including~~ comprising:

(a) a detection cell having an entry gate~~;~~, ~~the system including~~ and

(b) a drive ~~means~~ unit for controlling switching of ~~the~~ said gate,

wherein ~~the~~ said drive ~~means~~ unit is arranged to control switching of ~~the gate in a pseudorandom binary sequence~~ said gate in both a pseudo-random binary sequence and in a bit-flipped pseudo-random binary sequence,

wherein the system is arranged to produce analyzing matrices corresponding to said pseudo-random binary sequence and to said bit-flipped sequence, and data sets corresponding to outputs obtained from the system for said pseudo-random binary sequence and for said bit-flipped pseudo-random binary sequence, and

wherein said matrices and data sets are combined by matrix algebra to produce a system output with reduced noise.

2.-4. (Cancelled).

5. (Currently Amended) An IMS ~~1MS~~ detection system according to claim 1, wherein the cell has a drift region, and wherein ~~that~~ the gate is arranged to control entry to the drift region.

6. (Currently Amended) A method of controlling switching of an admittance gate in a detection system comprising~~, wherein the~~

(a) switching said gate ~~is switched in~~ both in a pseudo-random binary sequence and in a bit-flipped pseudo-random binary sequence;

(b) producing analyzing matrices corresponding to said pseudo-random binary sequence and to said bit-flipped sequence;

(c) producing data sets corresponding to outputs obtained from said system for said pseudo-random binary sequence and for said bit-flipped pseudo-random binary sequence; and

(d) using matrix algebra to combine said matrices and data sets to produce a system output with reduced noise.

7.-9. (Cancelled).